

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

1. (Previously Presented): A method of treating ore particles to facilitate subsequent processing of the ore particles to recover valuable components from the ore, including the steps of: providing ore particles with a major dimension of 15 cm or less and exposing the ore particles to pulses of microwave energy, each pulse being less than 1 second, and causing structural alteration of the ore particles without significantly altering the mineralogy, i.e. composition, of the ore, the structural alteration of the ore particles being a result of differences in thermal expansion of minerals within ore particles, as a consequence of exposure to microwave energy, resulting in regions of high stress/strain within the ore particles and leading to micro-cracking or other physical changes within the ore particles.

2. (Previously Presented): The method defined in claim 1 further including exposing the ore particles to microwave energy and causing structural alteration of the ore particles without catastrophic destruction of the ore particles.

3. (Previously Presented): The method defined in claim 1 further including screening the ore particles prior to exposing the ore particles to microwave energy in order to provide a preferred particle size distribution for subsequent microwave energy treatment.

4. (Previously Presented): The method defined in claim 1 further including screening the ore particles prior to exposing the ore particles to microwave energy in order to remove fines from the ore particles.

5. (Cancelled).

Response Under 37 CFR 1.116
Expediated Procedure
Examining Group 1793
Application No. 10/516,431
Paper Dated: June 30, 2008
In Reply to USPTO Correspondence of December 28, 2007
Attorney Docket No. 4623-045789

6. (Previously Presented): The method defined in claim 1 wherein the microwave energy within the pulses has high energy to give rapid heating of susceptor minerals in the ore.

7. (Cancelled).

8. (Cancelled).

9. (Previously Presented): The method defined in claim 1 wherein the pulse time period is less than 0.1 second.

10. (Previously Presented): The method defined in claim 1 wherein the pulse time period is less than 0.001 second.

11. (Previously Presented): The method defined in claim 1 wherein the ore particles include microwave susceptor and non-susceptor components and the valuable components in the ore are metals and the metals are part of the microwave susceptor components of the ores.

12. (Previously Presented): The method defined in claim 1 wherein the ore is an ore in which the valuable components are metals and the metals are present as a sulphide.

13. (Original): The method defined in claim 12 wherein the ore is a copper-containing ore in which the copper is present as a sulphide, such as chalcopyrite or chalcocite.

14. (Original): The method defined in claim 12 wherein the ore is a nickel-containing ore in which the nickel is present as a sulphide.

15. (Original): The method defined in claim 12 wherein the ore is a uranium-containing ore.

16. (Previously Presented): The method defined in claim 1 wherein the ore is an ore in which the valuable components are iron and the ore contains iron minerals where some of the iron minerals have disproportionately higher levels of unwanted impurities.

17. (Previously Presented): The method defined in claim 1 wherein the ore is a diamond ore and the ore has a mix of diamond containing minerals and diamond barren minerals such as quartz.

18. (Cancelled).

19. (Previously Presented): The method defined in claim 1 further including transporting the ore to an inlet end of the transfer chute on a conveyor and transporting the microwave-treated ore from an outlet end of the transfer chute on a conveyor.

20. (Previously Presented): A method of treating ore particles to facilitate subsequent processing of the ore particles to recover valuable components from the ore, including the steps of: providing ore particles with a major dimension of 15 cm or less and exposing the ore particles to pulses of microwave energy, each pulse being less than 1 second and causing structural alteration of the particles without catastrophic break down of the particles, the structural alteration of the ore particles being a result of differences in thermal expansion of minerals within ore particles, as a consequence of exposure to microwave energy, resulting in regions of high stress/strain within the ore particles and leading to micro-cracking or other physical changes within the ore particles.

21. (Cancelled).

22. (Previously Presented): The method defined in claim 20 wherein the microwave energy within the pulses has high energy to give rapid heating of susceptor minerals in the ore.

23. (Previously Presented): The method defined in claim 20 wherein the pulsed microwave energy includes pulses of high energy.

24. (Cancelled).

25. (Previously Presented): The method defined in claim 20 wherein the pulse time period is less than 0.1 second.

26. (Previously Presented): The method defined in claim 20 wherein the pulse time period is less than 0.001 second.

27. (Previously Presented): A method of recovering valuable metals from an ore including the steps of:

- (a) providing ore particles with a major dimension of 15 cm or less;
- (b) treating the ore particles by the exposing ore particles to pulses of microwave energy, each pulse being less than 1 second and causing structural alteration of the particles, the structural alteration of the ore particles being a result of differences in thermal expansion of minerals within the ore particles, as a consequence of exposure to microwave energy, resulting in regions of high stress/strain within the ore particles and leading to micro-cracking or other physical changes within the ore particles; and
- (c) processing the treated ore particles to recover valuable metals.

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28. (New): A method of treating ore particles to facilitate subsequent processing of the ore particles to recover valuable components from the ore, including the steps of:

providing ore particles with a major dimension of 15 cm or less;

screening the ore particles prior to exposing the ore particles to microwave energy in order to remove fines from the ore particles; and

exposing the ore particles to pulses of microwave energy, each pulse being less than 1 second, and causing structural alteration of the ore particles without significantly altering the mineralogy, i.e. composition, of the ore, the structural alteration of the ore particles being a result of differences in thermal expansion of minerals within ore particles, as a consequence of exposure to microwave energy, resulting in regions of high stress/strain within the ore particles and leading to micro-cracking or other physical changes within the ore particles,

wherein the microwave energy within the pulses has high energy to give rapid heating of susceptor minerals in the ore.